

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/09399

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 38/02

US CL : 530/300

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 530/300

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	TAGUCHI, H. et al. A mechanism-based probe for gp120-hydrolyzing antibodies. Bioorg. Med. Chem. Lett. 2002, Vol. 12, pages 3167-3170, especially figure 1, page 3168.	1,2,4,11,13- 15,18,19,21,28, 31,32,44,46,48
X,P	PAUL, S. et al. Specific HIV gp120-cleaving antibodies induced by covalently reactive analog of gp120. J. Biol. Chem. 30 May 2003, Vol. 278, No. 22, pages 20429-20435, entire document..	1-3,11,13- 15,18,19,21,25,28,31,3 2,44,46,48
A	NISHIYAMA, Y. et al. Toward selective covalent inactivation of pathogenic antibodies. J. Biol. Chem. 27 February 2004, Vol. 279, No. 9, pages 7877-7883.	1

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

### \* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"B" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

05 May 2005 (05.05.2005)

Date of mailing of the international search report

01 JUN 2005

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US

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### Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:  
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-4, 11-15, 18, 19, 21, 22, 25, 28, 31-34 and 44-48

Remark on Protest

☐  
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees

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### BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-34, 44-48, and 50, drawn to a covalently reactive ligand analogue (CAL) of formula I, methods of making CAL, and methods of activating or inactivating a nucleophilic receptor (NuR).

Group II, claim(s) 35-38 and 43, drawn to methods of agonism or antagonism of NuR on a cell surface.

Group III, claim(s) 39-42, drawn to methods of inducing growth arrest or cell death.

Group IV, claim(s) 49, 51, and 52, drawn to methods of vaccinating.

Group V, claim(s) 53-55, drawn to methods of passive immunotherapy.

Group VI, claim(s) 56 and 57, drawn to methods of imaging.

Group VII, claim(s) 58 and 59, drawn to methods of producing receptors or enzymes.

Group VIII, claim(s) 60 and 61, drawn to an immunoassay for detecting antibodies or antigens.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

Applicant is required to select a single disclosed species for examination. In order for more than one species to be examined, the appropriate additional examination fees must be paid. The species are as follows:

An infinite number of compounds are encompassed by formula (I), for example substituted trisaccharides, substituted tripeptides, substituted tri-nucleotides, 30000-mer substituted peptides, 30000-mer substituted oligonucleotides and combinations of all saccharides, peptides, and oligonucleotides thereof.

The claims are deemed to correspond to the species listed above in the following manner:

All the claims are drawn to the generic formula (I), and thus encompass a myriad of compounds.

The following claim(s) are generic: 1-61.

The inventions listed as Groups I-VIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

According to PCT Rule 13.2 and the guidelines in Section (f)(i)(B)(1) of Annex B of the PCT Administrative Instructions, all alternatives of a Markush Group must have a common structure. Although the chemical compounds of Claims 1-61 share a common

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activity of activating or inactivating NuR, the compounds are not regarded as being of similar nature because all of the alternatives do not share a common structure.

An international and a national stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept ("Requirement of Unity of Invention"). Where a group of inventions is claimed in an application, the requirement of unity of invention shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art. An international or a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the following combinations of categories: (1) a product and a process specially adapted for the manufacture of said product; or (2) a product and a process of use of said product; or (3) a product, a process specially adapted for the manufacture of the said product, and a use of the said product; or (4) a process and an apparatus or means specifically designed for carrying out the said process; or (5) a product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process.

If multiple products, processes of manufacture or uses are claimed, the first invention of the category first mentioned in the claims of the application and the first recited invention of each of the other categories related thereto will be considered as the main invention in the claims, see PCT Article 17(3)(a) and 1.476(c).

The alleged special technical feature is the backbone structure  $-(L_1-L_x-L_m)_n-$ , wherein  $m$  is 1-30,  $n$  is 1-1000 and  $L_1$ ,  $L_x$ , and  $L_m$  are components of a ligand determinant. However, as indicated, for instance in claim 1, the backbone may be of the formula  $[L_1-L_x-L_1]_1$ , wherein it reads upon a substituted trisaccharide, or it may be of the formula  $[L_1-L_x-L_{30}]_{1000}$ , wherein it reads upon a substituted 30000-mer oligonucleotide. Therefore, the compound structure is undefined, and may consist of any substituted amino acid, sugar, nucleotide, or fatty acid, or any combination thereof. The compounds, generically classified as CAL, are each separate and distinct structures, each subject to their own respective search. Thus, there is no special technical feature among Groups I-VIII. Groups I-VIII lack unity.

Inventions I-VIII are drawn to compounds, compositions, and methods that are related in that they contain at least one CAL. However, because each invention is of different chemical, peptide, and/or nucleotide composition, each invention differs in structure (chemically, physically, or pharmacologically) and, absent evidence to the contrary, in function. Therefore, a separate and distinct search is required for each invention and each invention and compound is patentably distinct one from the other.

The first named invention is Group I, drawn to a compound of formula (I), and a method of use and a method of making, wherein a specific compound not defined. The claims have been searched insofar as reading upon the identified invention (Figure 4), wherein  $L_x$  is Asp, and has been extended to the species Glu and carboxylic acids of amino acids (e.g., C-terminus of claim 4),  $L'$  is a carboxylic acid of Asp (or Glu);  $Y'$  has also been extended to those species as defined in claims 11 and 12,  $Y''$  is a bond, and  $Z$  has been extended to those species defined in claim 18.

Continuation of B. FIELDS SEARCHED Item 3:

STN REGISTRY, CAPLUS, structures of Figure 4 with  $Y'$  definitions of claims 11 and 12,  $Z$  definitions of claim 18; EAST, CAPLUS: CAL, covalent reactive ligand